

Counting in steps of 2, 3, 5 and 10

Page 8

Ruby

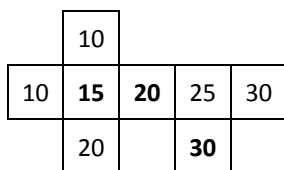
- 1 6, 7
- 2 13, 14
- 3 24, 25
- 4 89, 90
- 5 21, 19
- 6 100, 101
- 7 10, 12
- 8 25, 30

Pearl

- 1 10, 12
- 2 15, 18
- 3 15, 20
- 4 30, 40
- 5 90, 100
- 6 21, 18
- 7 45, 40
- 8 10, 0

Diamond

1



- 2 14 is incorrect.
This number should be 15.
- 3 Add 2.

Reading and writing numbers

Page 9

Ruby

- | | | |
|---|---|----------|
| 1 | a | 16 |
| | b | 20 |
| | c | 6 |
| | d | 14 |
| 2 | a | ten |
| | b | five |
| | c | fifteen |
| | d | nineteen |

Pearl

- | | |
|---|------------|
| 1 | 91 |
| 2 | thirty-two |
| 3 | 46 |
| 4 | twenty-six |
| 5 | 101 |
| 6 | 110 |

Diamond

- | | | |
|---|--|--|
| 1 | a | 56 or 57 |
| | b | Accept one of the following:
26, 36, 46, 56, 66, 76, 86 or 96 |
| 2 | Yes | |
| 2 | Sally has the numbers the wrong way round.
71 is seventy-one.
17 is seventeen. | |
| 4 | 60 | |

Place value

Pages 10–11

Ruby

- 1** **a** 2 tens + 4 ones
 b 4 tens + 3 ones
 c 6 tens + 8 ones
- 2** **a** 52
 b 28
- 3** 34
- 4** **a** 37
 b 74
 c 76
 d 59

Pearl

- 1** **a** 7
 b 4
 c 2, 7
- 2** **a** 3
 b 80
 c 50, 7
- 3** 100 or one hundred
- 4** 78

Diamond

- 1** The cards only show 3 tens or 4 tens, so Gabby can't use 9 as 9 tens because the card shows 9 ones.
 The largest number Gabby can make is 49.
- 2** Both Ben and Dev are right.
 Ben is right because 15 has one ten and 5 ones.
 Dev is right because one ten is also ten ones. Ten ones and five ones make fifteen ones.
- 3** 74
- 4** 63
- 5** When you add or subtract tens, this does not change the ones column, for example:
 $63 + 20 = 83$
 $63 - 40 = 23$
 There are still 3 ones.

Identifying, representing and estimating numbers Pages 12–13

Ruby

- 1**
- | | |
|----------|----|
| a | 65 |
| b | 47 |
| c | 14 |
| d | 5 |
- 2**
- | | |
|----------|----|
| a | 4 |
| b | 8 |
| c | 11 |
| d | 15 |
- 3**
- | | |
|----------|-------------------------------------|
| a | Accept any estimate.
Actual = 10 |
| b | Accept any estimate.
Actual = 15 |

Pearl

- 1**
- | | |
|----------|----|
| a | 65 |
| b | 75 |
| c | 24 |
| d | 65 |
- 2**
- | | |
|----------|----|
| a | 20 |
| b | 35 |
| c | 45 |
- 3**
- | | |
|----------|------------|
| a | 58 ± 1 |
| b | 71 ± 1 |
| c | 92 ± 1 |

Diamond

- 1**
- | | |
|----------|---------------|
| a | 2, 11, 20 |
| b | 3, 12, 21, 30 |
- 2**
- 11
- 5 beads show 5 tens.
6 beads show 6 ones.
- 3**
- 69 is 9 over 60, but only 1 below 70, so it is closer to 70.

- 4 There are many possible answers, e.g. 500, 410, 401, 320, 302.

Comparing numbers

Page 14

Ruby

- 1** **a** 15
 b 30
- 2** **a** 17
 b 19
- 3** **a** 1
 b 1

Pearl

- 1** **a** >
 b <
 c =
- 2** 32, 43, 56, 61, 72
- 3** 91, 57, 49, 44, 19

Diamond

- 1** The 9 is the ones digit.
 Ben must compare the tens digits first.
 6 tens is greater than 5 tens, so $60 > 59$.
- 2** The first number, any number < 32 .
 The second number, any number > 51 .
- 3** 53, 57
 The number must be between 40 and 60.
 The tens digit must be 5.
 Only 53 and 57 can be made.

Addition and subtraction facts

Page 15

Ruby

1 $5 + 3 = 8$

2 $8 - 2 = 6$

3 a 4

b 12

c 4

4 a 4

b 8

c 12

Pearl

1 28, 38, 48

2 70

3 a 22

b 23

Diamond

1 a $87 + 6 =$

$80 + 7 + 6 =$

$80 + 13 =$

$80 + 10 + 3 =$

$90 + 3 = 93$

b $72 - 9 =$

$60 + 12 - 9 =$

$60 + 3 = 63$

2 Sometimes true.

(Only true if the numbers are the same.)

Accept:

Never true.

(When the numbers are different.)

Adding and subtracting mentally

Page 16

Ruby

- 1** **a** $13 + 4 = 17$
 $10 + 3 + 4 = 17$
 $10 + 7 = 17$
- b** $12 + 8 = 20$
 $10 + 2 + 8 = 20$
 $10 + 10 = 20$
- c** $18 - 6 = 12$
 $10 + 8 - 6 = 12$
 $10 + 2 = 12$
- 2** **a** 18
 b 8
 c 20
 d 8

Pearl

- 1** $36 + 27 = 63$
 $30 + 6 + 20 + 7 =$
 $50 + 13 = 63$
- 2** **a** 42
 b 86
 c 97
 d 18
 e 51
 f 37
 g 33
 h 33

Diamond

- 1** 27 has 2 tens and 7 ones.
 Ted has got the number the wrong way round.
 He has written 7 tens and 2 ones.
- 2** This is a good idea.
 It makes the calculation easier to do mentally.

Accept other opinions if supported by a reasonable explanation.

- 3** Obe just needs to add the number of tens.

There are 9 tens, so the answer is 90.

- 4** There are many possible answers, e.g.

$5 + 5 + 5$, $10 + 3 + 2$, $9 + 3 + 3$

Using the inverse

Page 17

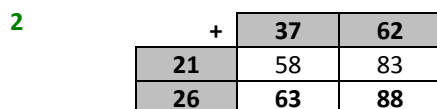
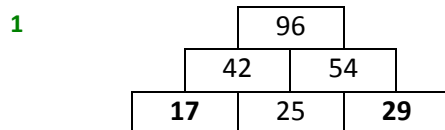
Ruby

- 1 a $20 - 6 = 14$
 $13 + 6 = 19$
- b $15 - 6 = 9$
 $8 + 6 = 14$
- c $15 + 4 = 19$ ✓
- 2 a $13 - 4 = 9$
- b $9 + 5 = 14$
- c $20 - 7 = 13$
- d $12 + 8 = 20$

Pearl

- 1 a $50 - 27 = 23$
 $24 + 27 = 51$
- b $15 + 17 = 32$ ✓
- c $99 - 41 = 58$ ✓
- 2 a $34 + 23 = 47$
- b $79 - 28 = 51$
- c $38 + 42 = 80$
- d $59 - 23 = 36$

Diamond



Addition and subtraction problems

Pages 18–19

Ruby

- 1 $7 + 6 = 13$ (counters)
- 2 $12 - 3 = 9$ (dogs)
- 3 $7 + 8 = 15$ (letters)
- 4 $5 + 5 = 10$ (children)
- 5 $17 - 8 = 9$ (p)
- 6

a	5
b	19
c	8
d	8
e	16

Pearl

- 1 $18 + 14 = 32$ (stars)
- 2 $24 - 15 = (£)9$
- 3 $25 - 17 = (£)8$
- 4 57 (apples)
- 5 36
- 6 108
- 7 51 (toy cars)
- 8 29 (t-shirts)

Diamond

- 1

a	$23 + 57 (= 80)$ or $27 + 53 (= 80)$
b	$25 + 37 (= 62)$ or $27 + 35 (= 62)$
c	$72 - 53 (= 19)$
- 2 $83 - 59 = 24$, $82 - 58 = 24$, $81 - 57 = 24$, $80 - 56 = 24$
- 3 Possible answers:

a	$60 + 4 = 64$
b	$30 + 34 = 64$
c	$69 - 5 = 64$
d	$99 - 35 = 64$

Multiplying and dividing by 2

Pages 20–21

Ruby

- 1 10
 2 16
 3 14
 4 20
 5 12
 6 **a** $3 \times 2 = 6$
b $4 \times 2 = 8$
c $2 \times 2 = 4$
 7 **a** $1 \times 2 = 2$
b $9 \times 2 = 18$

Pearl

- 1 **a** 24, 26
b 30, 36
c 8, 6
 2 10
 3 7
 4 18
 5 6
 6 11
 7 (£)10
 8 12 (packs)

Diamond

- 1 They are both right.
 It depends whether you look at 2 rows of 4 or 4 columns of 2.
- 2 Yes, if you say seven twos that means seven lots of two, which is the same as seven lots of two added together.
- 3 Multiplication fact: accept $5 \times 2 = 10$ or $2 \times 5 = 10$
 Addition fact: accept $2 + 2 + 2 + 2 + 2 = 10$ or $5 + 5 = 10$
- 4 Yes, they are the same. If you set them out as arrays, they would have the same number of dots (20).
- 5 $2 \times 6 = 12$ $12 \div 2 = 6$
 $6 \times 2 = 12$ $12 \div 6 = 2$

Multiplying and dividing by 5

Pages 22–23

Ruby

- 1 30
- 2 35
- 3 a 20
b 15
- 4 45(p)
- 5 a $2 \times 5 = 10$
b $5 \times 5 = 25$
c $1 \times 5 = 5$
- 6 a $8 \times 5 = 40$
b $10 \times 5 = 50$

Pearl

- 1 a 40
b 40, 30
c 30, 15, 5
- 2 30
- 3 9
- 4 20
- 5 12
- 6 7
- 7 (£)40
- 8 11 (pages)

Diamond

- 1 95, 100 and 135.
- 2 10 (children)
10 groups of (\times) 5 children = 50 children
50 children \div 5 groups = 10 children
- 3 If you think of each pair as arrays, they will have the same number of dots.
- 4

\times	2	5	10
2	4	10	20
5	10	25	50
10	20	50	100

5 Jo is incorrect, $20 \div 5$ is not the same as $5 \div 20$. $500\text{p} \div 20 = 25\text{p}$.

The amounts to be divided are different and they are being divided by different numbers.

Multiplying and dividing by 10

Pages 24–25

Ruby

- 1 50
- 2 80
- 3 90(p)
- 4 70
- 5 (£)100
- 6 **a** $2 \times 10 = 20$
- b** $6 \times 10 = 60$
- c** $3 \times 10 = 30$
- 7 **a** $2 \times 10 = 20$
- b** $4 \times 10 = 40$

Pearl

- 1 **a** 50, 60
- b** 90, 100
- c** 120, 110, 80
- 2 70
- 3 8
- 4 40
- 5 6
- 6 10
- 7 (£)50
- 8 12

Diamond

- 1 The ones digit is 0.
All multiples of 10 have a ones digit of 0.
- 2 **a** 10 (coins)
- b** 100 (coins)
Ten 10p coins make £1.
Ten £1 coins make £10.
 $10 \times 10 = 100$
- 3 $5 \times 10 = 10 \times 5$ is correct.
If 5×10 and 10×5 were arrays, they would have the same number of dots.

Dividing 5 by 10 is not the same as dividing 10 by 5.

4

×	2	5	10
0	0	0	0
2	4	10	20
5	10	25	50

5

Accept any of the following, each set of numbers can be in any order: $12 \times 10 \times 1$, $12 \times 5 \times 2$, $6 \times 2 \times 10$,
 $4 \times 3 \times 10$

Four operations

Pages 26–27

Ruby

- 1 a ★★★★★★ Accept 6 (stars)
 b ★★★★★ Accept 4 (stars)
 c ★★★★★★★★ Accept 8 (stars)
 d ★★ Accept 2 (stars)
 e ★★★★★ Accept 5 (stars)
- 2 $6 + 4 = 4 + 6$
- 3 a 3
 b 3
 c 3
- 4 $5 + 6 = 11$

Pearl

- 1 a 45
 b 36
 c 4
 d 7
- 2 77
- 3 80
- 4 20
- 5 90
- 6 4, 12
- 7 b and d

Diamond

- 1 Yes, always true.
- 2 $12 \times 1, 6 \times 2, 4 \times 3$ Accept reversals of numbers.
- 3 a $7 \times 2 (=14)$
 b $5 \times 5 (= 25)$
 c $10 \times 5 (= 50)$
- 4 a Yes, Ben is correct.
 $5 + 5 + 5 + 5 = 4 \times 5 = 20$

$$2 \times 10 = 20$$

Both calculations have the same answer.

b

5

Halves, quarters and thirds

Pages 28–29

Ruby

- 1** **a** $\frac{1}{4}$
- b** $\frac{1}{2}$
- c** $\frac{1}{2}$
- d** $\frac{1}{4}$
- 2** $\frac{1}{2}$
- 3** $\frac{1}{4}$
- 4** 4 stars drawn.
- 5** 2 dots drawn.
- 6** 5 stars drawn.
- 7** 3 dots drawn.

Pearl

- 1** **a** 6
- b** 3
- c** 4
- d** 9
- 2** b
- 3** c
- 4** **a** 3
- b** 12
- c** 3
- d** 6

Diamond

- 1** Tom will only have cut the pizza in half if the two pieces are exactly the same size.
- 2** $\frac{1}{3}$
- There are three fours in twelve, so one four is one-third.
- 3** 20
- 4** So long as Gary is finding $\frac{1}{2}$ and $\frac{1}{2}$ of the same thing, Gary will always be correct.

But if Gary finds $\frac{1}{2}$ and $\frac{1}{4}$ of different amounts, he may be only sometimes correct, e.g. $\frac{1}{4}$ of 20 = 5 but $\frac{1}{2}$ of 8 = 4

5 There are different possible answers, e.g.

a $\frac{1}{3} > \frac{1}{4}$ $\frac{2}{3} > \frac{1}{4}$ $\frac{3}{4} > \frac{2}{4}$ $\frac{2}{4} > \frac{1}{4}$

b $\frac{1}{4} < \frac{1}{3}$ $\frac{1}{4} < \frac{2}{4}$ $\frac{2}{4} < \frac{3}{4}$ $\frac{3}{4} < \frac{1}{3}$

Equivalent fractions

Pages 30–31

Ruby

- 1 a, c and d.
- 2 a and d.
- 3 a and b.
- 4 4 stars drawn.
- 5 4 stars drawn.

Pearl

- 1 a and c.
- 2 2
- 3

a	<
b	>
c	<
- 4

a	6
b	6
c	Both answers are the same because $\frac{1}{2} = \frac{2}{4}$

Diamond

- 1 Yasmin is incorrect.
Quarters must be of equal size.
This shape is divided into 4 unequal parts.
- 2 Fran is correct.
 $\frac{2}{2}$ and $\frac{4}{2}$ are both equivalent to a whole, so the fractions are equivalent.
- 3 20, 20
Double $\frac{1}{2}$ to find one whole.
If $10 = \frac{1}{2}$ of a number, double 10 to find the number.
 $10 \times 2 = 20$, 20 must be the number.
 $\frac{2}{2} = \frac{1}{1}$ so if $10 = \frac{1}{2}$ of a number, then the number must be 20.
- 4 25 identified only.
 $\frac{2}{2} = \frac{1}{1}$ so if $\frac{1}{2}$ of 50 = 25, $\frac{2}{2}$ of 50 will also be 25.

Comparing and ordering measures

Pages 32–33

Ruby

- 1 Line B
- 2 Parcel B
- 3 Jug A
- 4 The dog
- 5 The bucket
- 6 **a** Tom
b Liz
- 7 Jug A
- 8 a is correct

Pearl

- 1 **a** <
b >
c <
d =
e >
f >
- 2 30 cm, 90 cm, 6 m, 8 m
- 3 10 kg, 1 kg, 100 g, 10 g
- 4 20 ml, 30 ml, 3 l, 30 l
- 5 **c**

Diamond

- 1 4 kg
- 2 350 cm, 4 m, 450 cm, 5 cm
Accept 350 cm, 400 cm, 450 cm, 500 cm
Changing 4 m to 400 cm and 5 m to 500 cm means all the lengths can be compared.
- 3 1 kg = 1,000 g
1,000 g > 60 g
- 4 blue, red, yellow
- 5 black, grey, white

Using standard units of measure

Pages 34–35

Ruby

- 10 cm
- 3 kg
- 2 l
- 10 °C
- 5 m
- 2 m
- 4 l

Pearl

- 2 m
- 45 kg
- 12 l
- 25 °C
- $1\frac{1}{2}$ l
- 20 °C

Diamond

- Many possible answers, e.g.
5 kg + 5 kg + 2 kg + 2 kg
5 kg + 2 kg + 2 kg + 2 kg + 2 kg + 1 kg
Accept any answer that uses 5, 2 or 1 and adds to 14.
- $1\frac{1}{2}$ l
 $1 + \frac{1}{2} = 1\frac{1}{2}$ l
- a** 3 cm
b 9 cm
- 1 kg = 1,000 g
1,000 g > 100 g

Amounts of money

Pages 36–37

Ruby

- 1 20p drawn.
- 2 50p drawn.
- 3 2p
- 4 £2
- 5 £5.50
- 6 £12
- 7 £1.15
- 8 £2.05
- 9 £25
- 10 8p

Pearl

- 1 20p
- 2 50p, 20p, 10p, 5p
- 3 £10, £5, £5
- 4 **a** £2, £2, £2, 20p, 10p; Accept other answers using coins that total £6.30.
b £5, £1, 20p, 10p; Accept other answers using notes and coins that total £6.30.
- 5 Possible answers: 5p, 1p, 1p, 1p; 2p, 2p, 2p, 2p; 1p, 1p, 1p, 1p, 1p, 1p, 1p, 1p
- 6 Possible answers: 20p, 2p, 1p; 10p, 10p, 2p, 1p; 10p, 5p, 5p, 2p, 1p; 5p, 5p, 5p, 5p, 2p, 1p
- 7 Possible answers: 20p, 10p, 2p; 20p, 5p, 5p, 2p; 10p, 10p, 10p, 2p; 10p, 10p, 5p, 5p, 2p; 10p, 5p, 5p, 5p, 5p, 2p; 5p, 5p, 5p, 5p, 5p, 5p, 2p
- 8 10, 2p, 2p, 1p

Diamond

- 1 $£2 + 20p + 2p + 2p = £2.24$
- 2 65p (pen) and 35p (pencil)
 $£1 - 30p = 70p$
 $70p \div 2 = 35p$ (cost of pencil)
 $35p + 30p = 65p$ (cost of pen)
- 3 $£20 + £10$; $£20 + £5 + £5$; $£10 + £10 + £10$; $£10 + £10 + £5 + £5$; $£10 + £5 + £5 + £5 + £5$; $£5 + £5 + £5 + £5 + £5 + £5$
- 4 Sometimes true: 52p can be made with three coins, 50p + 1p + 1p; 51p can be made with two coins, 50p + 1p.
- 5 £10 and £5
Think of parts; double 1 part would be 2 parts, this makes 3 parts.

$$15 \div 3 = 5$$

$$5 \times 2 = 10$$

Money problems

Pages 38–39

Ruby

- 1 15p
- 2 4p
- 3 10p
- 4 15p
- 5 9p
- 6 7p
- 7 14p
- 8 £14
- 9 £8
- 10 £4

Pearl

- 1 25p
- 2 26p
- 3 £1.05; Accept 105p
- 4 £1.38; Accept 138p
- 5 £1.40; Accept 140p
- 6 £12
- 7 £40
- 8 £4.90

Diamond

- 1 £6
- 2 20p and 5p
Or
50p and £2
- 3 £5
- 4 76p *or* 72p

Telling the time

Pages 40–41

Ruby

- 1**
- a** 3 o'clock; Accept 3:00
 - b** 7 o'clock; Accept 7:00
 - c** 10 o'clock; Accept 10:00
 - d** half past 2; Accept 2:30
 - e** half past 8; Accept 8:30
 - f** half past 12; Accept 12:30
- 2** Clocks should be drawn with some accuracy. The minute hand should be longer than the hour hand.
- a** 4 o'clock
 - b** 9 o'clock
 - c** half past 10
 - d** half past 5

Pearl

- 1**
- a** half past 10; Accept 10:30
 - b** 5 past 6; Accept 6:05
 - c** 25 past 8; Accept 8:25
 - d** 20 to 9; Accept 8:40
 - e** 10 to 3; Accept 2:50
 - f** 10 past 4; Accept 4:10
- 2** Clocks should be drawn with some accuracy. The minute hand should be longer than the hour hand.
- a** 20 past 10
 - b** 5 to 3
 - c** 25 to 12
 - d** 5 past 12

Diamond

- 1** Ewan is correct.
Each time one hour passes, the hour hand moves on one number.
At half past the hour, the hand will be half way between the two numbers.
- 2** half past 4; Accept 4:30
Subtract 1 from the hour.
 $5 - 1 = 4$
- 3** 12 o'clock; Accept 12:00

- 4 On Clock A, Raz can only tell it is 25 past. He cannot tell 25 past which hour.
On Clock B, Raz can tell it must be 7 o'clock. When the hour hand points at a number, it must be o'clock.

Comparing and sequencing time

Pages 42–43

Ruby

- 1 Wednesday, Thursday, Friday
- 2 morning, afternoon, evening
- 3 Sunday
- 4 Friday
- 5 Thursday
- 6 (Thursday,) 10 April
- 7 (Thursday,) 9 October
- 8 morning
- 9 July
- 10 September, October, November

Pearl

- 1 3 seconds, 3 minutes, 3 hours
- 2 25 seconds, $\frac{1}{2}$ minute, 1 minute
- 3 1 day, 25 hours, 1 week
- 4 $1\frac{1}{2}$ hours
- 5 **a** 24 hours
b 48 hours
- 6 **a** 60 minutes
b 180 minutes
- 7 60 minutes
- 8 48 hours

Diamond

- 1 Ben will not have enough time to do his homework.
Either he will have to go out at 6 o'clock or he will have to only spend 45 minutes on his homework.
- 2 Accept any number of minutes >90 , <120 .
 $1\frac{1}{2}$ hours = 90 minutes
2 hours = 120 minutes
The missing number must come between.
- 3 Accept any number of hours >48 , <60 .
2 days = 48 hours

$$2\frac{1}{2} \text{ days} = 60 \text{ hours}$$

Accept any number of hours between.

- 4** No. 4 weeks is 28 days ($7 \times 4 = 28$).

Only February has 28 days (in a non-leap year).

Most months have 30 or 31 days and are longer than 4 weeks.

- 5** Alex is correct.

$$1 \text{ day} = 24 \text{ hours}$$

$$1 \text{ week} = 7 \text{ days}$$

$$24 \text{ hours} \times 7 \text{ days} = 188 \text{ hours}$$

$$188 > 100$$

- 6** (Wednesday,) 9th March

2-D shapes

Pages 44–45

Ruby

- 1**
- | | | |
|----------|-----------|---|
| a | triangle | 3 |
| b | square | 4 |
| c | circle | 2 |
| d | rectangle | 1 |
- 2** B
- 3** B
- 4**
- | | |
|----------|-----------|
| a | rectangle |
| b | circle |
| c | square |
| d | triangle |

Pearl

- 1**
- | | |
|----------|-----------|
| a | square |
| b | rectangle |
| c | triangle |
- 2** A square must have four equal sides.
- 3** rectangles
- 4** 5 triangles
2 rectangles
2 squares
- 5** 3
- 6** Accept: rectangle and triangle; two triangles; parallelogram and triangle; trapezium and triangle

Diamond

- 1**
- | | |
|----------|--|
| a | Many possible answers: 2 rectangles; 2 triangles. Accept any reasonable answer. |
| b | Many possible answers: 3 triangles; 2 squares and a rectangle. Accept any reasonable answer. |
- 2** The two lines must be longer so they join.
- 3** Many possible answers, e.g.
Properties that are the same: 4 sides; straight sides; 4 corners (vertices); 4 right angles.
Properties that are different: not all the sides are the same length.
- 4** Sometimes true. Sometimes you will get 2 squares.

3-D shapes

Pages 46–47

Ruby

- 1 a 3
 b 4
 c 1
 d 2
- 2 A
- 3 B
- 4 a cube
 b cylinder
 c cuboid
 d cone

Pearl

- 1 a cuboid; Accept other correct answers, e.g. pentagonal-based pyramid.
 b cone
 c (square-based) pyramid
- 2 a cube or cuboid
 b cylinder
- 3 a cuboid
 b cylinder
- 4 cuboid
- 5 a Accept any correct difference, e.g. all the faces on a cube are the same.
 b Accept any correct difference, e.g. a cone is the only shape with a curved surface or face.

Diamond

- 1 Dan is incorrect.
 A cube is a type of cuboid.
 Or, some cuboids can have two square faces.
- 2 Ned is incorrect.
 A pyramid can have any 2-D shape as its base, including triangles.
- 3 Many possible answers, e.g.
 Properties the same: all the faces are rectangles; all the angles on the faces are the same/right angles.
 Properties that are different: a cuboid can have different measurements; the faces of a cube are all square.
- 4 8

Properties of 2-D shapes

Pages 48–49

Ruby

- 1 a 4
b 4
- 2 a 3
b 3
- 3 a 4
b 4
- 4 a 1
b 0

Pearl

1

	3 edges or fewer	4 edges
Straight edges	triangle	square rectangle
Curved edges	circle	

2

Shape	Edges	Vertices
triangle	3	3
square	4	4
rectangle	4	4
circle	1	0

- 3 a Yes
b No
- 4 a
- 5 c

Diamond

- 1 James is incorrect. No 2-D shape with straight sides can have only two corners.
Accept James is correct if the explanation involves shapes such as a semi-circle.
- 2 Tim is incorrect.
Squares are rectangles with 4 equal edges/sides.
Rectangles don't have to have 4 equal edges/sides, just opposite edges/sides that are equal.

3 Always right.

4 Tara is incorrect.

A square has 4 lines of symmetry.

Properties of 3-D shapes

Pages 50–51

Ruby

- 1
- | | | |
|------------------------|----------|----|
| 1 cube | a | 6 |
| | b | 12 |
| | c | 8 |
| 2 cuboid | a | 6 |
| | b | 12 |
| | c | 8 |
| 3 square-based pyramid | a | 5 |
| | b | 8 |
| | c | 5 |

- 2 A cone has **1** flat faces and **1** curved surface.
 3 A cylinder has **2** flat faces and **1** curved surface.
 4 A sphere has **0** flat faces and **1** curved surface.

Pearl

1

Shape	Faces	Edges	Vertices
cube	6	12	8
pyramid with a square base	5	8	5
cuboid	6	12	8

- 2 Possible answers: cone, cylinder, sphere.
 3

Shape	flat faces	curved surfaces
cone	1	1
cylinder	2	1
sphere	0	1

- 4
- | | |
|----------|---|
| a | 1 |
| b | 2 |
| c | 0 |

Diamond

- 1
- | | |
|----------|---|
| a | Properties the same: they are both 3-D shapes; they both have some flat surfaces/faces/sides. |
| b | Properties that are different: the cylinder has a curved surface, the cuboid does not. |

- 2** Yes, doubling the length, width and height will mean the numbers/proportions will stay the same, so it will still be a cube.
- 3** Zara is incorrect. A cuboid must have pairs of equal faces, the faces cannot be all different.
- 4** Tim is almost correct, a corner is where 2 or more edges meet.
- 5** Possible answers: sphere, cone, cylinder.

Faces of 3-D shapes

Pages 52–53

Ruby

- 1 rectangle
- 2 square
- 3 4 triangles and 1 square
- 4 circle

Pearl

- 1 cube
- 2 **a** circles
b rectangle
- 3 circle
- 4 (square-based) pyramid
- 5 Megan is incorrect. The faces of a cuboid must be rectangles.
- 6 Ben is incorrect. The base of a cone is a circle. This shape is not a circle.
- 7 Fay is incorrect. The faces of a cube must be made from the same squares.

Diamond

- 1 Sometimes true. A square is a kind of rectangle.
- 2 B and D.
- 3 Paul is incorrect. The triangles will not fit to make a pyramid.
- 4 Dev is correct. The pentagon will form the base. The five triangles will fit together to form a pyramid.

Patterns and sequences

Pages 54–55


Ruby

- 1
- | | |
|---|----|
| a | 14 |
| b | 16 |
| c | 35 |
| d | 70 |
- 2
- | | |
|---|--------------------------|
| a | <input type="checkbox"/> |
| b | <input type="checkbox"/> |
| c | <input type="checkbox"/> |
| d | <input type="checkbox"/> |
| e | <input type="checkbox"/> |
| f | <input type="checkbox"/> |

Pearl

- 1
- | | |
|---|-----|
| a | 45 |
| b | 100 |
| c | 12 |
| d | 21 |
| e | 14 |
| f | 30 |
| g | 24 |
| h | 100 |
- 2
- | | |
|---|--------------------------|
| a | <input type="checkbox"/> |
| b | <input type="checkbox"/> |
| c | <input type="checkbox"/> |
| d | <input type="checkbox"/> |
| e | <input type="checkbox"/> |
| f | <input type="checkbox"/> |

Diamond

- 1
- Kylie is incorrect. The next white circle will have 30, which is even.
 The first white circle of a pair is the third circle in a group of four. This means the numbers will be 3×4 , which is 12.
 This sequence will always give even numbers for the first white circle in a group of four circles.
- 2
- white
- 3
- 

4



5

a

45

b

grey

c

oval; Accept circle

Position, direction and movement**Pages 56–57****Ruby**

- 1 C
- 2 Up the stairs.
- 3 A
- 4 B
- 5 A
- 6 right

Pearl

- 1 C
- 2 a 1
b 3
- 3 (to the) left
- 4 a false
b false
c true
d true

Diamond

- 1 Peena is correct. It is a half turn, so it is half way round. Turning in either direction means reaching the same point.
- 2 Jay is incorrect. To make a quarter turn in one direction means making a three-quarter turn in the other direction.
- 3 Ben could be correct. There is no way to tell which way Ben has turned. The drawing could also show a quarter turn clockwise.

Pictograms

Pages 58–59

Ruby

- 1 6 (silver cars)
- 2 5 (blue cars)
- 3 black
- 4 silver, white, red
- 5 2 (black cars)
- 6 6 (green cars)
- 7 blue
- 8 33 (cars)

Pearl

- 1
 - a 8 (boys)
 - b (Class) 1
 - c 2 (boys)
 - d 24 (boys)
- 2
 - a 8 (girls)
 - b 2 (girls)
 - c 4 (girls)
 - d 42 (children)

Diamond

- 1 2 (cats)
 $8 \text{ cats} \div 4 \text{ symbols} = 2 \text{ cats}$
- 2 1 pizza.
The shape is half a circle.
The circle stands for 2 pizzas.
Half a circle will stand for $(2 \div 2 =) 1$ (pizza)
- 3 a
- 4 4 (children).
One square stands for 2 children.
Two squares will stand for $(2 \times 2 =) 4$ (children)

Tally charts

Pages 60–61

Ruby

- 1** **a** 14
 b 16
 c 10
- 2** **a** tally for 12
 b tally for 21
 c tally for 19
- 3** 28 (cars)
- 4** **a** 23 (children)
 b tally for 25
- 5** 50

Pearl

- 1** **a** 25
 b 19
- 2** **a** tally showing 28
 b tally showing 34
- 3** 30 (people)
- 4** 20 (letters)

Diamond

- 1** Sam needs to write a tally in groups of 5 so it is easier to count.
- 2** 27
 Take information from either column (but not both).
 Hot meal 9
 Cold meal 6
 Pack lunch 12
 $9 + 6 + 12 = 27$
- 3** This is not a good idea, as he might forget which tallies are 4 and which are 5.
- 4** Teas: Tally for 4
 Coffees: Tally for 8
 $21 - 9 = 12$
 $12 \div 3 = 4$ (number of teas)
 $4 \times 2 = 8$ (number of coffees)

Block diagrams

Pages 62–63

Ruby

- 1 **a** 6 (children)
- b** 5 (children)
- c** 4 (children)
- d** 3 (children)
- e** 13 (children)
- 2 **a** 5 (letters)
- b** 1 (letter)
- c** Jay
- d** 2 (letters)
- e** 4 (letters)

Pearl

- 1 **a** 20 (point)
- b** 10 (points)
- c** 15 (points)
- 2 10 (points)
- 3 5 (points)
- 4 11 (points)

Diamond

- 1 Harry is incorrect. Pictograms and bar charts can both show the same information.
- 2 Ari had 5 letters.
 Dev had 2 letters.
 Obi had 1 letter.
 $5 > 3 (2 + 1)$
- 3 Walk – 6 children.
 Car – 5 children.
 Bus – 2 children.
 $6 < 7 (5 + 2)$
- 4 Yellow team would need to gain 5 points. Yellow team: $15 + 5 = 20$ points.
 Blue team would need to gain 10 points. Blue team: $10 + 10 = 20$ points.

Tables

Page 64

Ruby

- 1 white
- 2 7 (years old)
- 3 Spot
- 4 3 (dogs)
- 5 2 (dogs)

Pearl

- 1 25 (men)
- 2 20 (women)
- 3 55 (people)
- 4 30 (women)
- 5 50 (men)

Diamond

- 1 16 (girls)
- 2 14 (boys)
- 3 30 (girls)